

## Supporting Information

### Magnetic field driven multi-functional "medical ship" for intestinal tissue collection in vivo

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#### List of Videos:

Video S1. The MFMS Controlled Navigation in S-Channel.

Video S2. The MFMS reversibly opens and closes its cabin under NIR laser irradiation.

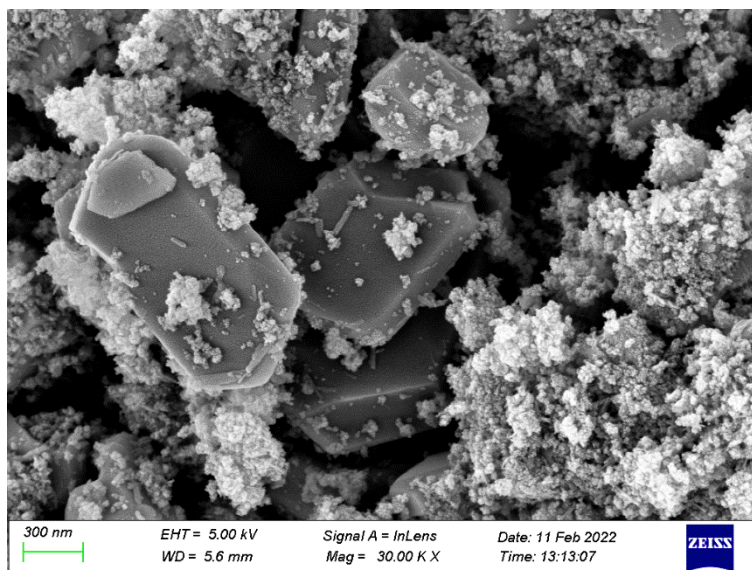
Video S3. MNPs forming disk-like clusters.

Video S4. Clusters of MNPs climb over an obstacle.

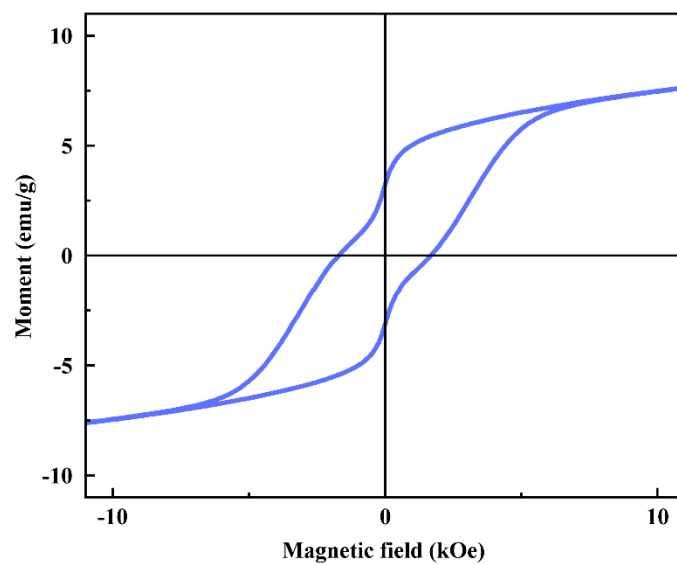
Video S5. Clusters of MNPs transport intestinal tissue.

Video S6. Intestinal tissue encapsulated by MNPs climb over an obstacle.

Video S7. Controlled intestinal tissue collection.



**Fig. S1** SEM of magnetic photosensitive resin doped with NdFeB microparticles and Fe<sub>3</sub>O<sub>4</sub> NPs (1:1 w/w).



**Fig. S2** Hysteresis loop of magnetically responsive wheel printed on magnetic photosensitive resin based on NdFeB microparticles doped with Fe<sub>3</sub>O<sub>4</sub> NPs (1:1 w/w).

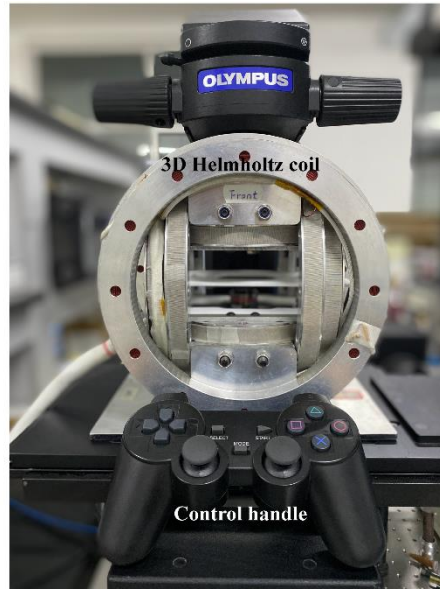


Fig. S3 3D Helmholtz coil magnetron system.

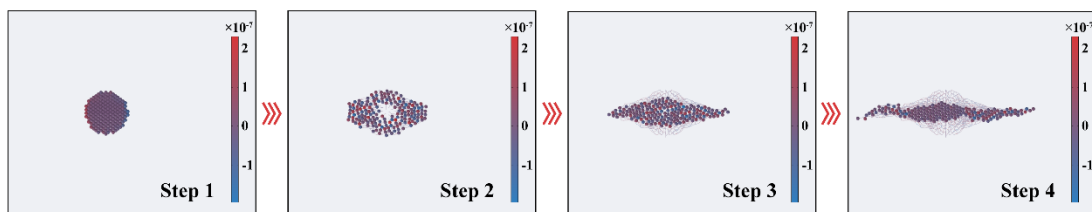


Fig. S4 Simulated deformation of cluster of MNPs under a low-frequency rotating magnetic field.

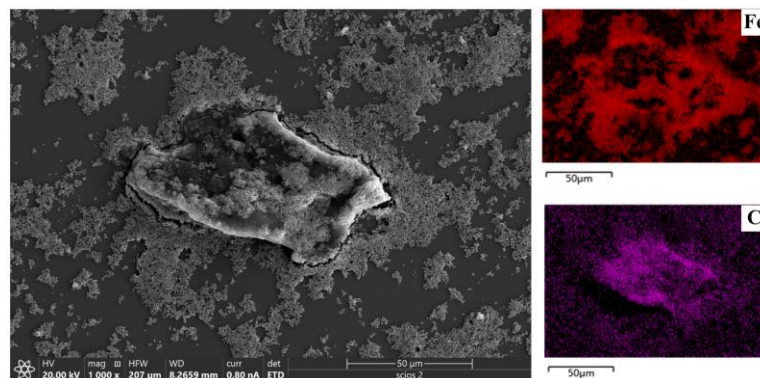


Fig. S5 SEM and EDS of chicken intestinal tissue encapsulated by MNPs.